



## Mega-events and the Resuscitation of Capitalism The Case of Expo 2015 in Milan

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Contrary to neoliberal dogma, the State and its monies do play a significant role in orienting the direction of “development” and in guaranteeing private profits. A “mega-event” is good example. Mega-events are occasions for concentrating a paying audience for a limited period of time – if people are curious about the activity offered (massive advertisement contributes to this, plus attendance by heads of State) – in a space transformed for the occasion (generally urban or suburban, but not only). On offer could be a special, or popular, activity such as watching or taking part in Olympic games, World (or regional) Football Cup matches, celebrations for specific events (Colombiadi in Genoa, 150<sup>th</sup> anniversary of the unification of Italy in Turin), and Universal Expositions – now called “Expo” – organized around a particular theme, which is generally the very “power of the machine” on display for everyone to admire. *The Power of the Machine* is the title of the book by Alf Hornborg (2001) dedicated to unveiling the interplay of money and industrial technology, which leads to the accumulation of a “technomass,” with deleterious consequences on the environmental balances of the whole planet. The Swedish anthropologist sees his work as a new chapter in Karl Marx’s *Kapital*, and a study in the multidisciplinary field of human ecology inspired by world-system analysis and ecological economics. Hornborg’s view is radical: the Machine – the Industry that combines fuel and raw materials<sup>2</sup> – functions not because of technology, which does not exist apart from economic calculation, but because of economic and power relationships, and of culture. Industrialism *per se* is based on the extraction of resources in a thermodynamically unequal exchange between the core and the periphery of the world-system. The money circuit, with prices and rewards in the form of profit, is just an expression of our particular culture and has no physical basis whatsoever: it only masks unequal exchanges between human labor, natural resources and the Machine.

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<sup>2</sup> Hornborg dates the growth of technomass to around 1750, when fossil fuels began to be employed in a massive way, though they were also used in minor quantities prior to the coal and oil era – for example, peat was fundamental to Dutch hegemony in the 17<sup>th</sup> century. The substitution of human labor with fossil fuels is particularly implausible in terms of environmental sustainability.

In this paper I am applying his theory<sup>3</sup> to describe Expo 2015 in Milan, examining the mega-event first in terms of money allocation and then with an analysis in physical terms, to show that it can be considered an exemplification of the Machine, despite its slogan/theme “Feeding the planet, energy for life.” I will highlight Hornborg’s strong points and some of his weak ones, and confront and integrate his statements with other theories, such as Immanuel Wallerstein’s on the capitalist world-economy and James O’Connor’s on the role of the State in the capitalist economic cycle.

### **Expo 2015 in Milan**

Mega-events aim at strengthening the national identity, or the local identity within nations. Expos in particular combine it with a promise of cosmopolitanism:

An Expo is a global event that aims at educating the public, promoting progress and fostering cooperation. It is the world’s largest meeting place, bringing together countries, the private sector, the civil society and the general public around interactive exhibitions, live shows, workshops, conferences and much more. (<http://www.bie-paris.org/site/en/>)

These are words of the organizer of contemporary Expos, the Bureau international des Expositions (BIE), an intergovernmental body established by the Convention relating to International Exhibitions (1928), which regulates those which are neither commercial nor artistic, and that last for more than three weeks. The BIE now has a membership of nearly 170 countries. Cities who candidate themselves to host a Universal Expo (every five years) or an International one (every two years) are evaluated by BIE (see Gallione (2012, 36 and 46 on the buying and selling of votes of its member States). Vicente Gonzales Loscertales, BIE’s general secretary, credits the invention of the concept of exposition to the French triumphant bourgeoisie. The French State promoted popular consent by organizing the celebration of national identity and of the idea of progress. Already in 1798 Paris hosted the “Exposition publique des produits de l’industrie Française,” and Napoleon organized three other expositions, with also a didactic aim. Industry and economics were extolled, culminating in award ceremonies celebrating the best entrepreneurs: “The exposition is the place where materials are experimented with, and their practical and creative use becomes a factor of civilization” (Gonzales Loscertales 2008, 11). The historian Paul Greenhalg writes that “the genre became a self-perpetuating phenomenon, the extra-ordinary culture spawn of industry and empire.”<sup>4</sup> The sociologist Maurice Roche (2000) attributes the first international character to the London exhibition in 1851, called “The Great Exposition of the Works of Industry of all Nations.” Twenty-five countries and some colonized territories (also bringing displays of human “savages”) took part in it, and it was visited by six million people, with a very positive bottom line – in contrast to the recent economic failures of Vancouver 1986, Lisbon 1998, Hanover 2000 and Saragoza 2008<sup>5</sup> where not only was the balance negative, but the infrastructures built was subsequently abandoned. The Olympic games in Athens 2000 are another prominent example of the dangerous legacy of debt and rusting buildings left in the wake of a mega-event. All seven recent mega-events considered by Stefano Di Vita (2010, 309, ff) had problems with democratic decision-making combined with

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<sup>3</sup> Among Hornborg’s writings, I am essentially using *The Power of the Machine*. Some later articles (2014, Trawick and Hornborg 2015) still repeat the central concepts of his 2001 classic.

<sup>4</sup> Quoted by Roche (2000, 47) from Greenhalg, Paul: *Great Exhibitions and World's Fairs, 1851-1939*. Manchester University Press, 1988, p. 2.

<sup>5</sup> This is the opinion of the architect Manuel Salgado on Lisbon Expo: “Some think that there was an ‘overdose’ of public investments [on the Expo area] to the detriment of a more equal distribution over the city’s territory” (“L’Expo 10 anni dopo. Quale bilancio”, 19 Februar 2009, public debate in Milan, quoted by Gallione 2012, 302). On Hannover, despite the fact that it took place on its fair grounds: “Too many permanent structures were built, to remain, in the end, unused” (Gallione 2012, 303). Out of 27 international expositions that took place from 1857 to 1970, the profitable ones were just one more than those that were concluded with an investment loss (Roche 2000, 43). I could not find an overview of the economic results of all recent Expos (BIE remained silent to my request). It is interesting that the food provider in Saragoza, Milano Ristorazione, lost 1.2 million euros on the occasion, having bought special machines for 800,000 euros which were then left rusting in storehouses (Carlucci and Caruso 2012, 250).

a disregard for previous social and urban problems of the areas chosen; provoked a deterioration of the environment, and four did not achieve the economic development expected.

Despite this, Expos are getting increasingly more popular among the ruling class. In 1992 BIE had about 80 member States, 140 in 2007, 168 in 2015, and more and more cities are taking part in the competition to host the event, proposing a slogan-theme and a project of public works that will be connected with it. In 2007 Milan advanced its candidacy for hosting Expo 2015, that was awarded the next year, winning over its the Turkish competitor city of Izmir. It is currently hosting the 2015 Expo with the theme “Feeding the planet, energy for life,” from May to October. The initial proposal to host a “global garden” cultivating specialties from all the countries taking part in the exhibition was later discarded as not attractive enough for the (paying) public. So, ironically, a site at the edge of the city classified as agricultural land (in reality a rather desolated place next to the new fair grounds that used to be an Agip petrochemical refinery) was covered with cement, asphalt and infrastructures. Critics have also underlined how the chosen theme is reflecting the current problematic de-industrialization of Italy, predicting a future of tourism and service to the international middle class.<sup>6</sup>

### The political debate

The goals of “development,” “progress,” “economic growth” are shared by all the parties that have come to local and national power since Milan’s candidature in 2007: the mega-event is a convergence point for both center-left and center-right coalitions policies – in fact they can be considered along the same lines as the old left and right wings of a single party, the Liberals, whose various and antagonistic components were ruling Italy a century ago. Milan’s candidature was drafted by the former local right-wing government (*giunta* Moratti), with the support of the left-wing Prodi government. The contract for hosting Expo 2015 was signed by BIE and the Italian government – still led by Prodi – in 2008, entailing the foundation of a private company responsible for the event: Expo S.p.A. (“Società per Azioni,” limited company).<sup>7</sup> Its president, Diana Bracco, was at that time the president of Assolombarda, the regional association of entrepreneurs, then she became vice president of the national association Confindustria (she is currently being investigated for fiscal fraud for 3 million euros<sup>8</sup>). The left-wing local government elected in 2011 (*giunta* Pisapia) accepted the onus, although it could have opted out of the contract by paying a penalty much lower than the cost of the mega-event. In Parliament, only Movimento Cinque Stelle objected to this public spending, while all other parties enthusiastically greeted the awarding of the Expo 2015 site as a “great opportunity” for Milan and for the country. Even the Catholic Church joined the choir: “We are convinced that Expo 2015 *‘can represent an occasion for the Milan of the future to find its soul’*” (Scola 2013, 10).<sup>9</sup> At the grand opening of the show even the Pope sent his usual message profusing hope: “This is a propitious occasion to globalize solidarity, let us not waste this opportunity.”<sup>10</sup> The rhetoric of political leaders is all aimed at “growth:” the justification for the expenditures for Expo was job creation and an increment in the growth rate. “Today Italy enters its tomorrow” affirmed the head of government Renzi while opening the Expo, hinting at an end to the long economic crisis through enhanced exports of Italian products.

The main opposition to the mega-event was the No Expo Committee, that later became a coalition called *Attitudine No Expo*, which since 2007 has been organizing initiatives to inform the public, including Climate Camps since 2011, and producing books and other critical material (e.g. the five issues of *Rivista No Expo*, a review downloadable at [www.sosfornace.org](http://www.sosfornace.org)). They dubbed the Expo theme as

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<sup>6</sup> See “The industry of the mandolin” (Evangelisti 2015, also published by [www.sinistrainrete.info](http://www.sinistrainrete.info), with many other texts critical of Expo 2015). This destiny is openly claimed by other authors (e.g. Guala 2009, 20).

<sup>7</sup> Arexpo S.p.A. was also founded with the task of finding the site. It bought the land and gave it to Expo S.p.A. for gratuitous use, being in charge of selling the site after the event.

<sup>8</sup> One million euro of her possessions have been put under seizure by the police in May 2015 (<http://www.rainews.it/dl/rainews/articoli/Evasione-presidente-Expo-Diana-Bracco-indagata-sequestro-per-1-mln-euro-add889ee-2209-48c2-9c6c-ff1a91cb9be1.html>).

<sup>9</sup> The cardinal of Milan Angelo Scola is quoting himself from “Il corpo e il mondo.” The only difference with the official discourse seems to be the use of the word “occasion” when everybody else was speaking of “opportunity.”

<sup>10</sup> [http://www.ansa.it/canale\\_expo2015/notizie/news/2015/04/30/expo-2015-si-alza-il-sipario.-tutto-il-mondo-guarda-milano\\_5758576a-ee29-4669-8472-b4d807d97f02.html](http://www.ansa.it/canale_expo2015/notizie/news/2015/04/30/expo-2015-si-alza-il-sipario.-tutto-il-mondo-guarda-milano_5758576a-ee29-4669-8472-b4d807d97f02.html)

“Feeding the transnationals, damages for the planet.“ Expo is unmasked as a “shock economy” operation, that will end in “the Trimurti of debt-precariousness-cement” (Offtopic and Maggioni 2013, 172):

Expo is the fetish used to justify actions that politicians and banks would have taken anyway, but at a different pace. If and when they are accomplished, it will only be because local authorities will assume the debts. The Italian “project financing” works in this way, while project financing should rather guarantee returns on the investment thanks to the money raised by the accomplished work itself. For example a motorway should pay for itself with the money made from the toll. Meanwhile, however, someone must spend to build the road. Banks have no trust, neither does the private sector: the public is still the bottomless cash cow. (Offtopic and Maggioni 2013, 144)

The Clash City Workers, a Marxist group which considers Expo a typical appropriation of public goods to remedy the falling profit rate, writes:

Therefore Expo is an event that condenses the major contradictions of capitalism: from the environmental crisis to the financial and property speculation, from the privatization of key resources to corruption, from the tendency to monopoly to the degradation of the quality of the food. (Clash City Workers 2015)

Criticized by the former groups, forty Ngo’s accepted the proposal to take part in a “Civil Society’s” pavilion on the Expo premises, where they expose the anti-trade unions actions and disloyal commercial practices of the transnational companies who are “global partners” and sponsors for Expo, such as McDonalds, Nestlé and Coca Cola. They write that the proposed “Charter of Milan” (see further) really is:

A great cultural swindle, in which the great policy of ‘feeding the planet’ is entrusted to technology, science and finance multinationals. The examples are GMOs and the world price of water. Civil society is to locally promote nutrition education (I produce junk food, then educate you not to eat it), good practices, charitable solidarity, going to the gym to lose weight. The structural causes of the food crisis and those who are guilty for them no longer exist. (Molinari and Redazione 2014)

As many critics underline, the agricultural model showcased is the one promoted by transnational companies such as DuPont (partner of the US pavilion), Monsanto, Nestlé, and the many others doing research in biotechnology and marketing it. Basically its aim is dispossessing peasants, appropriating seeds through patents to garner a continuous stream of profit which renews itself at every new sowing.

In order to make it for the grand opening on May 1<sup>st</sup> – in itself an insult to the working class, as in Italy Labor Day is a public holiday celebrated with parades – a new figure with special powers was created: a government-nominated Commissar, Giuseppe Sala, who can bypass environmental- and labor-protecting laws: the “state of exceptionality” permits the neoliberal power to give free rein to the commodification of everything.

The deadline was met and Expo opened its doors in the morning, while in the afternoon the annual Mayday Parade – initiated in 2001 in Milan by the *precariato* in opposition to the morning one organized by the trade unions – was entirely dedicated to the anti-Expo protest. Tens of thousands gathered and marched. A “black bloc” of a few hundreds of masked people set fire to a dozen of cars and broke the windows of some 50 shops in the center of town, and the destruction was dubbed by the press “Milano a ferro e fuoco” (Milan ravaged). The day after, the mayor Pisapia and the Democratic Party (PD) called for volunteers to “clean the city” by canceling the political graffiti left by protesters, and an crowd of 20,000 city dwellers responded.

### “C’è da fare il mondo” (Everything must be made)<sup>11</sup>

Economic growth fostered by Expo was officially forecasted by the private business university Bocconi, at first in 2008 to support the Milan candidacy, then again in 2013 (repeating the same figures). Its professors foresaw a good 24.7 billion in increased production between 2012 and 2020 – but “only” 10.5 in value added. Every year 199.000 new jobs would be created.<sup>12</sup> Commenting on the multiplicative effect of the money spent, highlighted by the Bocconi study, even the advocate of neoliberal policies Roberto Perotti recognized that the multiplying effect would work for any State expenditure, regardless for what. Even this mainstream economist implied that the sum could have better been spent in projects more relevant to the necessities of people’s lives. All in all, to organize *circenses* is politically risky when *panem* is hard to come by.

Expectations were gradually reduced, and the last numbers trumpeted in July 2014 by the Commissioner for Expo were 15-16,000 new jobs to be expected. It still a far cry from the data certified by the Provincia di Milano: 4,500 new jobs distributed among 1,700 firms (at least: only local firms could be monitored).<sup>13</sup> On the other hand, more than 10,000 people answered to the call for the “historical opportunity” to act as volunteer hostesses and stewards – a new *Voluntariat* class? They are doing it illegally, as “volunteering” is defined as working for a non-profit association, never for a commercial company (this has not gone unnoticed in the outraged comments to the ad for Expo volunteers posted on Youtube<sup>14</sup>). Though working for a private firm cannot be for free, the Confederated trade-unions (except for FIOM) consented to this violation of labor laws and of the Constitution itself (art. 36 on fair remuneration) by signing an agreement with the Chamber of Commerce on the 23<sup>rd</sup> July 2013 foreseeing 18,500 volunteers to be compensated with a meal ticket a day for their two-weeks five-hourly engagement. Another agreement in May 2014 created an Osservatorio Partecipanti where the trade unions agreed to solve all the labor disputes. “In other words,” as Clash City Workers (2015) denounce, “in Expo it is forbidden to strike.”

There is also a legal dispute about the kind of contracts that were used in Expo, as the *apprendistato* should entail the teaching of a job (a deregulated form of it is used, without the duty to document what the firm has taught): these contracts are not valid for services at fairs (San Precario 2013). The latest news is that 600 people who were hired could not enter the site due to the lack of police clearance, as the Expos grounds have been declared “sensitive” and “of strategic value” (the site’s perimeter is protected by a 3 meter wall with barbed wire, under surveillance by soldiers with machine guns). The police’s approval is said to be not decisive, but it seems that no employer has gone against their indications. People were refused the pass because they had illegally put up political posters, or because they went to squatted places and *centri sociali*, that organize the most vocal opposition to Expo.<sup>15</sup> There is no legal basis whatsoever for these controls, that illegally checked 60,000 prospective workers.

The initial public allocation of 4.1 billion for Expo was cut by the Monti government to 1.4 when the crisis exploded in 2008. The money was finally assigned in 2012: 830 million from the State, 480 from local authorities, 70 from the Chamber of Commerce, though the official website now reports on-

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<sup>11</sup> The speaker is a *mafioso*, talking about the prospect for good business with a fellow adherent to a *cosca*: “L’Expo è una cosa milionaria, soldi, miliardi, c’è da fare il mondo” (“Expo is a thing worth millions. Money, billions, a world must be made” – telephone conversation intercepted by the judiciary and quoted by Stefanoni 2014, 224). See also <http://www.stampoantimafioso.it/mafia-e-expo-2015/>

<sup>12</sup> *L’indotto di Expo 2015. Un’analisi di impatto economico*, edited by Alberto Dell’Acqua, and paid for by the Milan Chamber of Commerce (synthesis of the study with press conference: [http://www.mi.camcom.it/c/document\\_library/get\\_file?uuid=b10742f8-6563-4684-b0a5-c1df75050a1b&groupId=10157](http://www.mi.camcom.it/c/document_library/get_file?uuid=b10742f8-6563-4684-b0a5-c1df75050a1b&groupId=10157)). See also the 2008 study: Dell’Acqua, Alberto, and L.L. Etro. *Expo Milano 2015. Un’analisi di impatto economico per il Sistema Paese ed i settori industriali italiani*. SDA Bocconi School of Management, Milan, 2008.

<sup>13</sup> The data come from Osservatorio mercato del lavoro and are presented by Cavicchio and Lo Verso (2014).

<sup>14</sup> <https://www.youtube.com/watch?v=FwpAZknHU8Q>, linked to <http://volunteer.expo2015.org/it/programmi> as information for prospective volunteers, but in fact a 1-minute ad playing on the motive of “you’ll have a lot of likes” (on Facebook). A comment by a fair hostess is noticeable: “Working for free at Expo is wrong,” as it is taking away jobs. She also unveils the rhetoric showing the hostess job to be glamorous, while it is in fact a tedious students’ temporary occupation, with visitors eager to go to their target, who would never stop to make friends with the service personnel.

<sup>15</sup> <http://www.ilmanifesto.info/expo-licenziamenti-preventivi-viminale-nella-bufera/> 25.5.2015

ly 618 million spent and accounted for.<sup>16</sup> This direct “investment” was transferred to Expo S.p.A., in charge of money making through sponsors, ticket sales and concessions to vendors. But this is not the only public expenditure that the government found necessary for Expo. Other, even more invasive, infrastructure was deemed “essential” for traffic flow during Expo: two new highways (BreBeMi: 2 billion for 61 km, and Pedemontana: 5 billion for 67 km), an outermost external bypass (1,7 billion for 30 km, dubbed the most expensive highway in Europe) – all cutting through fields and also parts of the Parco Agricolo Sud – plus the enhancement of railways and junctions. It is plainly and noticeably absurd to make new roads for the increased traffic due to a temporary event, though the highway projects were two decades old, fiercely opposed by the local committees against the degradation of urban life by traffic and against the destruction of agricultural land – to no avail. Public transport should also be improved with two new underground lines and the prolonging of the existing ones (not completed to date). In sum, the colossal public expenditures amount to 11.4 billion euros: 10 billion for mobility (on which a partial return can come in the form of users’ fees or concessions), and 1.4 billion euros allocated to Expo S.p.A.

Another (quite wacky) part of the project was a double connection called “Vie d’acqua” and “Via di terra.” The “Via di terra” consisted in a 90 million euro expenditure to decorate the main streets between the center of Milan to the Expo site. The project was canceled due to the crisis. The “Vie d’acqua” (deceivingly in the plural) was the construction of a boat canal from Milan to the Expo. Its budget was reduced from 290 to 175 million, again by the government’s cuts due to the crisis, and then partially transformed into an underground stream after a long fight with local committees opposed to the destruction of park land along its urban tracts (Offtopiclab 2014). Inhabitants of the areas entered the sites and blocked the constructions for months, but in uninhabited areas the works were completed. The final result is a much diminished new cement canal, about half a meter deep (or, rather, shallow), in areas where discarded old agricultural canals abound, side by side with the new one. A part of the “Vie d’acqua” project was a renovation of the Darsena, the old port of Milan, that has been accomplished by laying cement on the remains of the 17th century Spanish Walls that used to stand on one side of the old port.

### “Expo dà da mangiare” (Expo feeds)<sup>17</sup>

Technically the private appropriation of public expenditures had already started with the creation of the firm to manage the construction of the exhibition, as requested by the BIE, to which public money had already been transferred. After a long debate among its multiple political heads,<sup>18</sup> it was decided not to expropriate nor to use public grounds, but to buy the land for the exhibition. The chosen site has a trapezoid shape, bordered by the high speed railway, two other railways and the *tangenziale* (the ring-road around Milan). It was nominally agricultural land, but in fact it was abandoned, scattered with illegal dumps, desolated vegetation, and dirt roads. The only building was a farm, Cascina Merlata, hosting social projects, that were moved. It was mostly private land, a choice that many commentators described as Expo 2015’s “original sin” (e.g. Gallione 2012, 157; Offtopic and Maggioni 2013, 104). In fact all former Expos had mainly used existing structures and never started from scratch.<sup>19</sup>

The choice entailed a conflict of interest as Fondazione Fiera was both seller and buyer of most of this land (520,000 square meters). Among the rest, 260,000 square meters belonged to the family Cabassi (one of the giant companies responsible for the *cementificazione* of Italy, originally only excavators for other construction companies), 120,000 to the Rho municipality, 80,000 to the Poste, 52,000 to the Milan municipality (also in conflict of interest), 20,000 to five other small private proprietors. The

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<sup>16</sup> <http://dati.openexpo2015.it/content/disponibili-i-dati-aggiornati-su-lavori-flussi-finanziari-cantieri-e-opere>

<sup>17</sup> It was one of the two things that the crowd gathered to cancel graffiti the 2<sup>nd</sup> May shouted at a young woman who showed up with a sign on which she reproached the inhabitants of Milano for their indifference to people’s deaths (e.g. the refugees drowning in the Mediterranean), while so promptly reacting when material things got damaged. (Their other cry was “Take a sponge and clean.”)

<sup>18</sup> That is, the different local government constituting the societies Arexpo and Expo.

<sup>19</sup> Though Roche (2000, 10) writes that mega-events “are usually intended to physically transform some strategically important area in cities.”

total of ca 1,1 million square meter was paid for with 120 million. The value of the developed land after Expo was expected to increase tenfold – so it was bought at ten times more its agricultural value: 120 euros instead of 12 per square meter. In November 2014 an auction to assign it went deserted.<sup>20</sup>

After this costly acquisition of the land, the authorities proceeded with a change of destination in town planning to permit construction. The land transformation in the Rho-Pero-Milan trapezoid started with the preparation of the terrain, then cement was poured. Cement-making is one of the most energy-intensive construction processes, and after a piece of land has been covered with it, its potential for primary products is lost forever. The terrain was levelled, local water streams were canalized, and the first artifact, the “piastra,” was built. It is a concrete platform about 2 km long and between 350 and 750 meters wide, that is connected to the drainage system, water supply, and electricity grid, with about 10 km of roads traced. The works can be compared to the construction of a city, with two permanent buildings and 80 temporary pavilions, a surrounding canal and a little lake, a children’s park, and the ex farm reserved to Ngo’s. The construction of the temporary pavilions was at the expense of the 145 nations and of the many big transnational corporations participating in the event (a staple presence). Coca Cola, New Holland Agriculture, Vanke, JooMoo, Federalimentare, China Corporate United all have their corporate pavilions. So further public spending took place, on the order of millions of euros: e.g. 3 to build and stage the Vatican pavilions, 6 for the US. It is stressed that the pavilions will be moved and re-used for purposes always specified on posted signs, in the name of sustainability.

States take part in Expos for “promotion” reasons and the BIE arranges help for the poorer countries to be represented at facilitated conditions. Expo, as all displays of “the power of the machine,” is also an investment in nationalism, plus it reinforces the interstate system itself, which world-system analysis rightly considers one of the basic institutions of the contemporary capitalist world-economy.

The future destination of the developed land could legally be the construction of houses and other buildings on 52% of its surface (a high urbanization index for Italy) with a percentage of social housing. As said, this is still undecided. Possibly the public sector will help further “the economy” by moving there the Palazzo di Giustizia (courthouse) and/or a part of the University of Milan, as its (our) rector declared.

The judiciary has also intervened. From the very first tender, irregularities were already evident, but the judges investigating them were stopped by the Milan General Procurer with no apparent reason other than to let the Expo take place undisturbed. The press called “a record” the fact that the first two tenders, one for preparing the land and the other for building the “piastra,” were both investigated for corruption. They were, in the usual bipartisan way, assigned respectively to CMC (what is called a “red” cooperative) and to Mantovani (a Catholic-oriented firm). The judges are also investigating the toxic waste fill of the BreBeMi highway site, while firms that have contracted other works for Expo had previously been convicted for collusion with mafia, trafficking in waste, and for not having requirements to tenders. Other firms are under investigation for corruption.

Some commentators, such as the journalists writing exposés, underline how Italian mega-events are particularly subject to this larceny (Carlucci and Caruso 2012, Stefanoni 2014).

### **Justifying Expo 2015**

Alf Hornborg underlines the importance of cultural factors in the acquiescence to or the acceptance of the unequal exchanges between core and periphery of the world system that can be revealed by a thermodynamic analysis of the material and energy flows.<sup>21</sup> We will soon see the physical significance of Expo, and if and how it represents an unequal exchange – but it has surely concentrated public monies in a very peculiar project, as temporary as it can get – apart from the construction of the new underground lines that will save time for its daily users of all classes (at the expense of the time of all the

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<sup>20</sup> Among the construction works connected to Expo there is the “Expo village” at the nearby Cascina Merlata: to house about 1,3 thousand Expo delegates a new quarter of 520,000 square meters was built, with 1,600 apartment to be sold on the free market and 700 for social housing.

<sup>21</sup> See Frame 2014 on the necessity to start inductively from the flows, and of theorizing a role for the semiperiphery countries, that many “Third World” countries now have become.

workers, also resource extractors, who contributed to building it, as Hornborg would add).<sup>22</sup> Expo is not so much a potlatch celebrating prosperity, but as a waste in times of economic crisis. Indeed, many of the cultural elements presented have been provided to the public to create consensus about the public investment on what is basically a six-month amusement park, aiming at stunning adults and children with 3D motion pictures, holograms, bizarre architecture: “an exciting experience that leaves you speechless”<sup>23</sup> (not only in my peculiar opinion, is this a gross exaggeration). Still, “Feeding the planet” is just a dim excuse: with an entry ticket of 35 euros (only 5 after 19.00, when many pavilions are closed), the “didactical part” – or rather what should be a political debate – would hardly stand by itself without the fun fair. “Fun fair” structures are temporary almost by definition, and put great emphasis in it. Only for a short time you can enjoy the machines that amuse you, and hammering advertisement is always employed to draw attention to the exceptionality of this state. Indeed massive advertisement/brainwashing campaigns extol the visit to Expo as a “must do,” “must be there.” Its brand has been displayed for years everywhere, from cars belonging to sponsor companies to train stations and websites (particularly obnoxious the Trenitalia one, where the train timetables are located), it is even inscribed on the top of the skyscraper of the Regione Lombardia in Milan. TV advertisement is also targeting children to exploit “the nag factor,” enticing them to the “Children’s Park”. School groups are brought to visit the exposition at discounted prices (10 euros), with the encouragement of the Region Lombardia (responsible for public education), which with its «Expo 2015 e la scuola italiana» campaign aims at bringing two million pupils to visit (in a letter to the school directors to send out to teachers, it encouraged the kids to eat at the Expo McDonald’s<sup>24</sup>).

The first culturally accepted serious element to create acceptance for Expo is without doubts the promise of “growth” and “development.” In the words of the BIE:

An Expo is also an extraordinary way to foster development. The event boosts the improvement of infrastructures, transportation networks and housing capacity.<sup>25</sup> It generates employment and job creation and improves the global business and investment environment of the country.<sup>26</sup>

Another cultural element to create consensus is the victory in an international competition, along with the prestige associated with BIE approval. This was used as a boost to national identity. Let us not forget the promise to feed the planet:

Milan will become a global showcase where more than 140 participating countries will show the best of their technology that offers a concrete answer to a vital need: being able to guarantee healthy, safe and sufficient food for everyone, while respecting the Planet and its equilibrium.<sup>27</sup>

These cultural elements are supposed to legitimate the public expenditure, interpreted to be necessary for Milan to be “in good standing” being visited “by the world.” Newspapers used all-out-of-proportion titles such as “Milano this year is the center of the world.” In the name of international prestige Italians were also incited to “behave” on this occasion of international display, also by volunteering or by accepting the more “flexible” – that is, with loss of workers’ rights – job contracts that were introduced especially for Expo.

There is no real way to know whether these cultural elements are truly needed, as most people never actively protest public expenses, which they have never really been called upon to approve in the first

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<sup>22</sup> See Hornborg 2001, 150 and 2011, 49 and 107. There are elements of redistribution, too: the purchase of solar panels for public buildings in Rho (see below, note 22), with 800,000 euro from Expo S.p.A. was greeted by the municipality as a wind-fall gain.

<sup>23</sup> <http://www.expo2015.org/it/da-non-perdere--le-attrazioni-dei-padiglioni>

<sup>24</sup> <http://milano.repubblica.it/cronaca/2015/04/30/news/expo-113210235/>

<sup>25</sup> Nevermind that there is no need for extra housing capacity in Milan – see further.

<sup>26</sup> <http://www.bie-paris.org/site/en/expos/about-expos/what-is-an-expo>

<sup>27</sup> <http://www.expo2015.org/en/learn-more>. Note that technology is indicated as the answer to hunger, a position heavily criticized by Hornborg.

place, but passively accept the government's decisions. Nevertheless it was the economic violence of exorbitant fines that crushed the local resistance against the new roads and highways, while popular opposition to the urban canal did succeed after a long fight – but maybe the project has just been postponed.

As emissions contributing to the disastrous Earth warming have become salient, Expo expresses a concern – or rather feigns it: the zero option of not building it had been politically excluded, though cement-making is one of the greater releasers of carbon dioxide, coming second after thermoelectric powerhouses. The EU cap-and-trade directives offer the possibility to use the fake solutions of the Kyoto protocol to “control” the emissions of this greenhouse-effect gas.<sup>28</sup> The Expo website reports an estimation of its emissions, including the constructions, the materials, and the visitors' travels: between 939 and 1.420 kton CO<sub>2</sub>eq, even more than the foreseen amount for which the EU had allowed for. Under the EU-ETS system (Emission Trading System), derived from the Kyoto protocol, the excess amount now requires Expo S.p.A. to buy “carbon credits,” with money that will be spent by their provider in “environmental projects.” Solar cells panels will be bought to be placed on 18 public buildings in Rho, co-financed by Expo and the municipality: the “remedy” to excessive emissions requires even more expenditure by the public purse (though seemingly for a good cause).<sup>29</sup> All in all, the cap-and-trade system is just a smokescreen for the capitalist “business as usual.” By all means, “sustainable development,” the central concept of the Kyoto protocol, is a contradiction in terms, according to Hornborg and many others (Danna 2012). And how is it possible to talk about “sustainability” of Expo at all? This event was conceived to last for six months.

“Sustainability” appears at the core of the “Charter of Milan,” presented as the legacy<sup>30</sup> of this mega-event: it is gathering State signatures as if it were a UN document. Its propositions about sustainability and equity in the “food system” come from a “scientific committee.” Its contents were criticized in the conference “Expo: feeding the planet or the transnational companies?” (7<sup>th</sup> February 2015) promoted by some independent leftist city counselors with the participation of Susan George and Flavio Valente of Via Campesina. Nonetheless the General Secretary of the UN is expected to come to Expo to receive the Charter from the Italian government on the 16th October.

In the Charter, and in Expo in general, attention is drawn to technical “solutions” that will presumably multiply harvests, in a renewed version of the Green Revolution. No technical solutions will not stop hunger, just as the Green Revolution didn't, but they will require higher investments, generate debt and result in a concentration of land possession, exactly as the Green Revolution has. The long-discovered and widely demonstrated concept (e.g. Lappé and Collins 1977 and 1988, George 1990) that hunger rarely derives from scarce harvests (though these can bring up the price of food leaving more people without it) but mostly from a lack of money plus an individualistic social organization (Davis 2001) is set aside and ignored.

Admittedly, the cultural impact of Expo would be quite different if its publicity clearly stated how many more CO<sub>2</sub> emissions it has caused instead of how they will be “compensated” for with even more industrial activity, and what its true impact is in terms of soil loss and degradation of materials and of energy is. But it would be a far step from the propaganda needed to let the public enjoy the fair: a honest quest to solve humanity's environmental and nutritional problems is not what seems to be at stake here.

### **Reviewing Hornborg's Machine**

Alf Hornborg's theory aims to explain the process of accumulation fostered by the use of machines:

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<sup>28</sup> Since 2005, when the EU-ETS system started, emissions in the EU have been cut by 3%, but even the official dedicated website recognizes that this is rather due to the crisis than to the “carbon credits” ([http://ec.europa.eu/clima/policies/ets/index\\_en.htm](http://ec.europa.eu/clima/policies/ets/index_en.htm)).

<sup>29</sup> <http://www.expo2015contact.it/sostenibilita-expo-2015-acquistera-crediti-per-lemissione-di-co2/#sthash.LyF3UPIG.dpuf>; <http://www.comune.rho.mi.it/Comunicati-Stampa/Comunicati-Stampa/Comune-di-Rho-e-la-Societa-EXPO-2015-insieme-per-la-riqualificazione-energetica-degli-immobili-comunali>

<sup>30</sup> For a critical assessment of the “social legacy” of Expo 2015 see Costa (2014).

I hope to reveal how the material existence of modern, industrial infrastructure (i.e. ‘development’) ultimately relies on certain cultural notions about production and exchange, and on the unequal flows of resources that these notions mask and reproduce. (Hornborg 2001, 2-3)

In his definition of capital, not limited to industrialism, the symbolic and the coercive components are on a par:

capital accumulation can be understood as a recursive (self-reinforcing) relation between some kind of material infrastructure and a symbolic or coercive capacity to make claims on other people’s labour or land-based resources. (Hornborg 2015a, \*)

In Hornborg’s view the “Machine,” which he also calls “technomass,” “industrial production,” “industrialism,” is essentially based on the unequal relationship between the core and the periphery, and on the use of money, which permits the social acceptance of immense inequalities by avoiding reciprocity. Machines are social phenomena and depend on economic evaluations and on power. Through them the core of the world-system gains in physical and thermodynamic terms by selling its industrial products, only a part of which returns to the periphery that had furnished the fresh resources to build them highlighting an unequal exchange in physical terms:

An alternative [to the quest for “energy values”] approach would be to ground notions of underpayment and unequal exchange not in some (contestable) theory of value (whether based on bullion, land, labor, or energy), but in the proportion of a manufacturer’s or manufacturing center’s total finished product that is continuously returned to the suppliers of energy and raw materials in the context of the productive potential of various institutional arrangements. This proportion defines how much of the productive potential of energy and materials is permanently being transferred to the manufacturing center and likely to be accumulated in its own, expanding infrastructure. (Hornborg 2001, 38)

By definition, in an economy based on profit, the prices for raw materials and energy are lower than the prices of finished products:

“Growth” is not something that technology generates in a pure material sense, but a consequence of how industrial products are evaluated in relation to fuels and raw materials. (...) the industrial sectors have to sell in order to survive because selling is their means of drawing fresh resources from their peripheries. (Hornborg 2001, 13)

The capitalist money circuit D-M-D’ assures that the degradation goes on, as profit (more money, buying more raw materials, energy and human labor) is awarded to the most destructive processes: industry making resort to fossil fuels. This, according to Hornborg, is the main – and lethal – contradiction between Industry and the working of Nature, in which humans are inevitably immersed. He goes a step further than Karl Willem Kapp, the German economist author of *The social costs of the private enterprise* (1950), where he noted that all the “externalities”, to use economists’ jargon, that private enterprises produce in the form of pollution, destruction of natural habitats, loss of alternative and collective uses of the resources (in Hornborg’s terms entropy and pollution) constitute an immense social cost: the dark side of profit. Profit can exist only because these social costs are not paid out.

So the Machine is essentially anything that can obtain resources (raw materials and fuel, but also human labor) to further its existence in exchange for its thermodynamically degraded products. This unequal exchange is one out of the five ways to accumulate capital – we will see the others soon – and *The Power of the Machine* is basically dealing only with this mode of accumulation, which seems to concern just the non-renewable sources of energy:

The industrial technomass cannot subsist by itself, drawing negentropy directly from nature, but depends on the existence of non-industrial sectors, where the price of negentropy (fuels, raw materials,

and the labor to extract them) is so much lower that such exchange rates can be maintained. (Hornborg 2002, 124)

So the prices of raw materials and labor must be lower than the price of industrial products for the Machine to run.

A key concept of Hornborg's theory is the application, in the wake of Nicholas Georgescu-Roegen (1976), of the second law of thermodynamics to what in current language is called "production." In fact all human activity apart from reproduction is essentially a transformation of energy and materials, with a higher entropy in the Earth system as its inevitable result. The only true production on our planet is the growth of biomass, which humans can foster but not cause, since the conversion of solar energy (external to the Earth system) is unique to plants. The reproduction of all other life forms ultimately feeds on plants, at the bottom of the trophic chain. This thermodynamic truth is masked by our language: production and growth are attributed to human activity, and money is considered their measure. We speak of "raw" materials and "refined" finished products, while in thermodynamic terms the "exergy," which is the potential for work, or (in terms of order) the "negative entropy" are lower in consumers' goods than in their original components: "Thermodynamic theory asserts that energy quality and order are *consumed* in maintaining a structure, whereas economics is founded on the idea that value is *generated* in production" (Hornborg 2001, 104).

### **Expo as Machine**

In Expo private firms derive profits from the State and not from the market – the only use analyzed by Hornborg, while James O'Connor (1973) highlighted the importance of the role of the State in fostering economic growth and technological progress in capitalism. The Italian State paid for the basic infrastructure, while foreign States (and the corporations present) provide for their own pavilions. As usual, a detailed analysis in terms of energy and material flows in the building and functioning of Expo would show that the high monetary value given (especially) to the industrial products and machines that States' money purchased, masks the fact that also in this case their "production" is really a transformation, entailing an accelerated process of entropy and pollution. It is quite ironic that Expo, on the contrary, spreads the message that its protagonists, States and their technology, are feeding the planet and are the source of the energy necessary to life.

The "machinery" used to prepare a universal exhibition envisages the use of tangible machines, employed and/or produced by the big corporations of the core countries: machines for building but also state-of-the-art visual technology to illustrate the main contents of the exhibition, and control technology for the high-level security that the Expo site in Milan has been declared to need. The bigger picture is that subordinate countries are routinely persuaded – by cultural elements, by positive economic forecasts and/or by corruption<sup>31</sup> – to pay for those machines and their functioning, generating public debt. This is happening to the Expo host country, too. Though it is too soon (but not risky) to affirm with certainty that the balance of Expo S.p.A. will be negative, the construction of the new highways and roads for this occasion has surely contributed to the Italian public debt. Indebted countries in the EU are currently forced to cut public expenditures e.g. in health service and schools – while it is evident that those debts cannot be repaid since the interest rate keeps multiplying them.<sup>32</sup> The result is going to be similar to the Structural Adjustment Programs imposed by FMI and BM, that made the quality and length of life worse in Third World countries and pushed the working class to accept any kind of working conditions. Within the context of the de-industrialization of core countries, salaries are pushed down, and Expo offers to a relevant proportion of the people involved in it only volunteer work.

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<sup>31</sup> See the autobiographical book by the economist John Perkins (2006), describing his job in producing forecasts of "demonstrate" favorable economic returns e.g. for dikes and highways, in order to convince foreign governments to pay for the US corporations' projects by taking loans from international banks.

<sup>32</sup> Graeber (2011). In Hornborg's text the use of money is generally intended as immediate payment (e.g. 2001, 13-14) without giving a specific place in his theory to the general mechanism of debt, through which production can be achieved although lack of financial liquidity would impede it (though he does describe the debt trap of Third World countries, e.g. 2001, 15 ff.).

Up to now we have mainly reasoned about Expo in terms of money, but what is Expo 2015 in physical terms? Land registered for agricultural use has been “developed” with what ecologists call “a grey fire,” because cement destroys life in a way similar to a blaze. The purpose of this destruction is to invite people to converge in a (sub)urban space, in principle from all over the planet – in reality 80-90% from the same country where it takes place, as the BIE says on its website (<http://www.bie-paris.org/site/en/faqs/118-questions-on-expos>) – to admire an energy-intensive exhibit made up of materials and artifacts that are planned to be moved or disposed of after six months. More machines and more energy will be employed in disassembling the pavilions and move them (since this is costly, it is doubtful that it will really be done). Only two buildings will remain in place, and on about the half of the Expo surface new houses and commercial spaces should be created, while the rest will be structured to become a public park – this is likely to remain an empty promise, as many other Italian cases have shown (Sansa et al. 2010). But also the further *cementificazione* of the Expo area is in doubt. Milan and Italy as a whole already have more housing and commercial or industrial spaces than they need. Milan’s population within the city’s administrative limits has diminished by about one-fourth since 1971, remaining stable over the last ten years. Istat calculated in 2008 that 10% of the buildings were “at the disposal,” that is, unused, in a country where 3.6 million hectares of agricultural land were lost from 1990 to 2005 (official statistics quoted by Martinelli 2011, 17). Lombardy is ranked first among the regions for its proportion of artificial surfaces: in 2008 it covered 14% of the land.

Nevertheless, the lack of demand is generally not a problem for the construction sector, as buildings are considered both by companies and by the population in general to be a value reserve. It is also not difficult to find credit to invest in new buildings, as the banks inscribe their disbursement as active investments instead of passive loans (Martinelli 2011, 28 ff.). In fact, Italy is the first producer of cement in Europe; consuming 600 kg per capita a year, while the other EU countries consume less than 400 kg (Martinelli 2011, 75). Italian cement producers often burn mixed waste as fuel, saving money and creating more pollution. Ironically, local inhabitants do not protest cement plants as much as incinerators, as the former are considered to be “productive.”

Unequal exchanges takes place also at the local level, not just across the borders. In the case of Expo, the private sector exploits the public for the building materials extracted from the local territory. The “cement cycle” not only needs cheap construction material but also cheap land on which to build: both are easily found in Italy. Excavated earth is sold by public authorities for a pittance (as it happens with other common resources like water): limestone, clay, stone chipping and gravel are public goods for which the Regions usually ask less than 10% of their market value from the companies which dig them (Martinelli 2011, 25).<sup>33</sup> Needless to say, this low price guarantees enormous profits to both excavators and builders. Zoning changes in town planning are easily obtained as they bring fresh cash to the municipalities (*oneri di urbanizzazione*), that for decades have been subject to reductions in State allocations. So public resources are eaten away not just in terms of money but also in terms of the productive potential of the land, that once “developed” is degraded, to the advantage of the proprietors of the excavating and building machines, who manage to bring to conclusion the D-M-D’ cycle, fostered by the public sector.

What also goes unsaid in the apology of capitalism that Expo is promoting, is that most of the final products of affluent societies are useless – such as empty new buildings – and are only bought and shown off as a sign of prestige or as identity marks, which is exactly what the objects exhibited in Expo represent for the States and the companies displaying them. That is, they are socially useful, but do not satisfy any primary need. Objects built for Expo are mostly as temporary as the signs that have been posted all over town to signal the exhibition (even the name of the railway station of Rho Fiera was changed to “Rho Fiera Expo”). Just one example: Azerbaijan displayed “tulip fields”: artificial flower-like shapes in different colors that can move when the visitors’ hands hover over them (many no longer worked after a month). Their destiny after the exhibition is unknown. Whether they were built as an

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<sup>33</sup> See also Martinelli 2011, 47; his original source is Legambiente. See also the information gathered by the movement “Stop al consumo di territorio,” active since 2009.

experiment to fabricate something else was not explained. (Other exhibits included sacks of rice and beans from Haiti and bowls of pistachios from Iran, with no further energy supply needed.)

### Culture as violence

It is conspicuous that from the economical point of view Expo essentially is an appropriation of public money to start a D-M-D' cycle to benefit some parts of the private sector (in particular, the construction industry) justifying this extravagant destination with cultural motives. James O'Connor would describe it as perfectly fulfilling the two functions (or actions or aims) of the State: accumulation and legitimation.<sup>34</sup>

But is the cultural power of the machine on which the unequal exchange rests on really just an “arbitrary foundation” as Hornborg (2001, 1) considers it? If machines are “the results of asymmetric, global transfers of resources” (Hornborg 201, 11), what is the primary cause of this result? What is the role of violence and of its threat in achieving the “exchange” – or, in the case of Expo, the monetary transfer? Hornborg’s notion of “power of the Machine” entails power to work, power over people to command their work, and cultural power over our minds. So violence or its threat is implied, belonging to the second way of intending “power.” When enumerating the different ways of appropriating somebody else’s<sup>35</sup> resources, the Swedish anthropologist indeed acknowledges the prominence of violence,<sup>36</sup> since his list of the various modes of accumulation starts with “plunder:”

- 1) plunder;
- 2) merchant capitalism, that is the exploitation of cultural differences in how goods are evaluated;
- 3) financial capitalism, or the servicing of debt;
- 4) undercompensation<sup>37</sup> of labor: the worker gets less in return for what s/he contributes in terms of either labor time, energy, resources, or money (slavery is included in this category);
- 5) underpayment of resources, measured using a thermodynamic analysis: a lesser proportion of the industrial production comes back to the land(s) that furnished the resources (Hornborg 2001, 57 – my version is simplified).<sup>38</sup>

But a higher level of classification seems to be possible, where only “merchant capitalism” can stand separated from all the other categories, all of which imply potential violence. Violence does not always need to occur in the form of “plunder,” but surely financial capitalism needs “the man with the gun” to ultimately be sure of obtaining its compensation. Also the undercompensation for labor and the underpayment of natural resources are *in ultima ratio* made possible by the threat of state violence against the lower class, if not by its open exercise (this is the field of the political fight between the power of the State and class organization). For all the other cultural mechanisms that contribute to the third, fourth and fifth type of unequal exchange, we must ask ourselves if culture itself is not just a sedimentation of violence, too, since acting in the few or only ways that are not constantly sanctioned by physical or emotional pain eventually becomes a cultural habit, and its roots in coercion are forgotten.

There’s not just the stick: the carrot helps, too. The choice not to question the justifications advanced by power, as Hornborg acknowledges, is also due to the rewards that adhering to those interpretations of reality can assure. In the case of Expo, the justification would be the promise, or hope, to “restart the economy” at least at the local level, through the construction of a venue to debate how to nourish the planet, advertised as a place where people who get in are able to reach a state of bliss – a sort of paradise of wonders. Not only: the visitors will be “educated,” plus feel proud of one’s country

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<sup>34</sup> And David Harvey (2006, xvi), in the wake of Luxemburg, would call it “accumulation by dispossession,” a form of predatory accumulation.

<sup>35</sup> We can also note that a reflection on the concept of private property, and its root in institutional or individual violence, is missing (until Hornborg 2011, 37).

<sup>36</sup> “Religious devotion and military coercion” were the instruments of the agrarian empires considered, while the Spanish and the British empires added advantageous exchange rates” (Hornborg 2015a, \*).

<sup>37</sup> “Undercompensation” and “underpayment” wrongly suggest that there can be a fair compensation in the exchange (see Frame 2014, 23 n. 15).

<sup>38</sup> he later made multiple references to violence’s importance in history: Hornborg 2011, 14; 32; 41; 59, 115, 139-140 and the final chapter – but at 78 he reiterates the view of cultural constructions of consumption and market in the “unequal exchange of value.”

and humanity's technical achievements, all this at the same time and all in all for a modest entry price. The cultural power of the corporate media is fully mobilized to give this picture, that many indeed have made theirs:

Hello everybody, I'm a french girl from Paris and I'm going to unveil one of my biggest dream : The Universal Exposition ! You can't imagine how this event is really important for me, I'm so eager and it's so difficult to wait this moment.. (Couchsurf post: "Universal Exposition in Milan!" 25<sup>th</sup> May 2015).

The cultural power of Expo is effective. Also because of its appeal it seems exaggerated to place this mega-event in the category of "plunder" of public resources, as some activists and journalists – albeit metaphorically – have done. Open violence in core states is less and less overtly employed. But what seems effective enough, in a core country with a high standard of living, is the economic violence of exorbitant fines. It is employed against the opponents to public works ("Grandi Opere") e.g. in Val di Susa where the population has been blocking for years the works for a new high-speed railway that is boring mountains with asbestos and uranium, dispersing toxic dust all over their narrow valley. In 2014 activists were fined 215.000 euros. Also resistance against TEM, the contested highway on cultivated land at the edge of Milan, was quashed with the menace of "gigantic fines," and the road was finally built with the excuse of Expo.<sup>39</sup>

To qualify Expo as "plunder" could indeed be justified, not only because the fines against ecologists are a legal form of economic violence, but for the openly violent and threatening methods of the *mafia*, which controls a big part of the cement cycle business: judges are investigating its presence as winners of many Expo tenders.

### **The Machine as Weapon**

By stressing the cultural power to create consensus, Hornborg puts the implicit violence of "the Machine," that can be exemplified by "the Weapon" into the background. Weapons are a special kind of machine that States strive to develop, guaranteeing profits to the companies providing and researching them, in the knowledge that violence or the threat thereof assures continued access to the resources needed by all the other machines.<sup>40</sup> Hornborg reasons that to govern by persuasion is cheaper than by guns – but can one substitute the other completely in a capitalist world-economy? Isn't the Weapon – and the soldier holding it – the ultimate reason for culturally accepting exchanges that are unequal to an extent unknown in history before our times? Hornborg does recognize power as violence, but he does not extend his analysis to the power of the machines that are not "productive" but destructive: the machines that are weapons force someone to do another's will without giving anything in exchange. Only in this sense can the technomass be said to "generate" unequal relations of exchange (Hornborg 2001, 17): the capacity for violence, also derived from the core's Machine is lurking behind the unfair terms of trade, having first been established in colonial times.

The capitalistic logic aiming at profit is not the only one shaping current society: also the political logic aiming at power at all costs is at work in the historical structures of the capitalist world-economy (e.g. Arrighi and Silver 1999).

According to Wallerstein (2004), the State mobilizes resources to lower the costs sustained by private firms in "production:" e.g. transportation costs and energy distribution costs, while it directly stimulates technological innovation by guaranteeing a profit to its developers, especially in the key strategic sectors of the military and communication. James O'Connor is less functionalist (despite his choice of words) and analyzes the State not just as a prop for the ruling class but as a locus of distributive class conflicts, that the upper class is now winning, imposing a neoliberal order where workers' social rights are being reduced towards zero, and the market is moving into all (formerly public) services to organize them in accordance with its profit logic.

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<sup>39</sup> See the report by Presidio Permanente Martesana <http://www.exposedproject.net/incendio-grigio/>

<sup>40</sup> This has been commented upon in the case of the Israeli-Palestinian conflict in the anonymous but detailed pamphlet *Meraviglia delle Meraviglie. Israele a Expo Milano 2015. Come far fiorire il deserto rubando l'acqua ai palestinesi*. Bologna 2015.

But why, all in all, did the Italian State and its neoliberal ruling class not just directly distribute the money among themselves instead of organizing Expo? If the question was just to grant the ruling class access to prestige items, paramount in the social analysis of Hornborg, it would have been much simpler to do so. But Expo *is* their prestige item – and besides the profits made with winning its tenders or with corruption, the political and economic ruling class believes in its utility to create consensus. Bizarre as it might seem, this question really includes all the issues that we have been dealing with: why is destruction called production and rewarded with an increased capacity for thermodynamic dissipation? Why is the satisfaction of human needs not paramount in economic activity? And what is money anyway?

Money is in fact a debt, an “I owe you,” issued by a powerful and/or trustworthy person or institution. And to understand money issued by a State, we have to go back to the Weapon, because the very word “soldier” derives from money: it was the token given to soldiers (a word derived from *solidus*, “coin” in Latin) to be given back by peasants to pay their taxes. The peasants were thereby forced to produce a surplus and sell it to get the money they needed, and armies were fed and clothed in the process (Graeber 2011). It is therefore a symbol of violence, of being coerced into parting with (some) fruits of one’s (and nature’s) labor – an aspect that Hornborg does not consider in his semiotic analysis of money.

The Expo-Machine also extolls the ideology of “work” justifying a revenue, but in the cultural climate in which we are immersed, there is no scrutiny of its qualities: is it beneficial to society or does it produce only avoidable pollution, rust and desolation? The money in possession of the ruling class will therefore be spent not only on the consumption that symbolically affirms their dominant role, but also to organize “production,” which is an actualized way of demonstrating power: power is affirmed and reproduced in the very act of employing people and assigning them tasks that are ultimately aimed at accruing the money injected to set an economic activity in motion. It is a way of achieving social order.

There can be other motives for organizing production through one’s own work and the work of others, even humanitarian ones. But the structure of the capitalist economy, fixed by laws that sanction the aim of profit for corporations (and bestow them with juridical personality, which gives them their legal existence in the first place) requires the whole private sector – the one that neoliberal policies are expanding – to act in this way. The historical structure rewards those who behave in the ways that maximize the result of the D-M-D’ circuit, as Marx described. The only way to do so is to ruthlessly exploit workers and nature, under the scrutiny of those holding the Weapon.

### **The Machine, agriculture and extraction**

When categorizing the different types of accumulation strategies, Hornborg does distinguish the products with intrinsic energy potential: food and fuel. But as the bulk of Hornborg’s reflections only applies to the unequal exchange sustaining industrialism, he did not engage with agriculture. A thermodynamic approach to this sector is a more difficult task than that to industry, as plants do accumulate exergy and not simply degrade it as machines do. According to Georgescu-Roegen, positive thermodynamic returns are in fact possible only in agriculture and extraction: plants grow by themselves and fossil fuels yield a higher (local) thermodynamic return than the energy spent to retrieve them. But precisely the application of the capitalistic logic (the techno-economic logic, as Hornborg writes, too) to agriculture is the subtext of Expo 2015, given its main themes of food and energy. It clashes with the logic of the peasant economy described by Alexander Chayanov, which does not maximize profit but minimizes potential loss. But the peasant economy is under attack by a “corporatization” of the primary sector, worldwide progressively subdued to the logic of profit by the increasing application of machines to agriculture. The transnational corporations present at Expo that are dealing with agriculture or food preparation are numerous (New Holland Agriculture, Federalimentare, Nestlé, Granarolo, Barilla, Coca Cola etc) and their practices of agribusiness unsustainable. It has abundantly been noticed that agribusiness uses many more calories from fossil fuels than what harvests can yield. Calculations give different figures,<sup>41</sup> but in any case its returns on the energy spent are negative, and the result is exergy dissipa-

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<sup>41</sup> Odum indicated a factor of 10 (quoted by Hornborg, 2001, 98).

tion instead of gaining from plants that convert solar energy. Nevertheless, the “legitimization function” of the State, to say it with O’Connor, embraces the attempt to make people accept the application of technology to agriculture as well. To say it with Wallerstein, the creation of monopolies in agriculture is pursued making recourse to biotechnology and intellectual property right laws: the current agribusiness’ research is geared towards finding ways to patent the reproductive capacity of seeds, that is, towards appropriating life itself, making it impossible for independent agricultural workers to let plant and animals reproduce without paying royalties e.g. on genetically modified organisms. It succeeded with cotton, soy, maize, and others. The incorporation of agriculture into the capitalist sector also implies the diminution of the subsistence sector in favor of commodification, and it is this dynamic that ultimately pushes the whole capitalist world-economy in its final crisis, as we will see.

Using a unifying concept of the “Machine,” as Hornborg does, is a huge generalization. It does work at the macro level of a “technomass,” that is the collective noun for all the artificial products that contemporary society accumulates, which is in fact expanding (others call it “technosphere” or “anthroposphere”<sup>42</sup>). From Hornborg’s standpoint, which evaluates the import-exports of materials and energy in thermodynamic terms, the final destination and functions of the Machine are not really important. But can we generalize his negative view, that certainly fits perfectly the useless, worthless, and ephemeral industrial consumer’s products, and accept a demonized version of all machines? If we look more precisely at the functions of “the Machine” from the physical point of view, it seems important to distinguish between machines which are employed in acting on the physical world as means of production, often making possible transformation that otherwise would not exist, and those which are the end result of the transformation effort, the “refined products” that are proposed to consumers (such as houses, cars, TVs, electric appliances that save human fatigue). Among the means of production we find the collectively used infrastructure (such as roads, canals, the electricity grid, telecommunication appliances) that also satisfy human needs or desires: in fact the most coveted consumers’ items are devices that can save human energy or time, a function that Hornborg hardly mentions, focusing mainly on the social prestige given by products.

While some machines are used in extracting or transforming materials and energy, others send, receive or exchange information, and can be a part of production machines or employed as consumers’ items. Weapons, too, could be classified as machines aimed at “production”, that is, extraction of resources, but they also serve the maintenance of the hierarchical order, as Hornborg’s example of the import-export of oil against weapons between the US and Peru shows (2001, 83).

So the categories of the Machine could in fact be five, according to their use: production, transformation, consumption, information, and destruction machines, or combinations thereof. Though Hornborg extensively describes the productive potential of fossil fuels in terms of energy/exergy, he does not make a separate analysis of the machines that yield more energy than the amount that they employ in extracting energy sources. Writing that: “This is the essence of human technology: the *use* of time and space to *save* time and/or space for *some social category*” (2001, 62), he forgets that machines that yield a higher energetic output than what they use, can be beneficial in themselves and benefit not just the present unequal social order but can be put to all kind of social use. In a society based on equality, it could probably still be judged worthwhile, by collective decision, to devote some labor time to acquire sources of energy that can spare human fatigue (especially if the sources of energy are easily available – which in fact is no longer the case for fossil fuels, but for renewable resources still is). Hornborg instead condemns all industrial technology, considering it “inherently exploitative” (2001, 45 and 130), and being “sources of malign agency” (2011, 35). He also writes:

Conjured as a developmental “level,” harmless in itself, industrial technology is represented in Marxist thought as separable from the capitalist “relations of production” that spawned it, and not only adoptable by, but even historically conducive to, and egalitarian future world. (Hornborg 2001, 108)

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<sup>42</sup> He contested the concept of Anthropocene in favor of Technocene (Hornborg 2015b). for this debate see Moore (2014a and 2014b).

This critique can be shared insofar as Marxists have in fact identified the endless growth of industry with “progress,” but it is doubtful that the refusal of economic growth should imply a zero option on industrial technology (what about the products and machines that help regaining health?). And some infrastructures, once built, are improving life even in the periphery without representing an unequal exchange (e.g. sewage). Immanuel Wallerstein (1999, 8) warns us against such a generalized negative view: “There has been an unfortunate tendency to make science the enemy and technology the enemy where-as it is in fact capitalism that is the generic root of the problem.”

The problem with Hornborg’s view is that he conceives of market prices as the only decisive factor in adopting a technology, but besides the market (and its prices deriving from power relationships) the State, or the collectivity, can also decide.

### **The law of no value, proletarianization and gender**

Taking stock of his analysis in thermodynamic terms of the industrial cycle, Hornborg affirms that the effort to find an underlying value justifying the price of commodities is vain. The attribution of a money value to products is a purely social process, with no demonstrable roots in any physical quality of the commodity.

Exergy is a unifying concept of what physically happens in “production,” but it does not solve the problem of the transformation of value into prices either: “It would be nonsensical to offer an ‘exergy theory of value’ because it would systematically contradict the evaluations that people actually make” (Hornborg 2001, 47). Value is ultimately attributed to objects that convey social prestige, in the capitalist world-economy as much as in the mini-systems studied by anthropologists (we can add – as said – that human beings also give value to what satisfies our needs and what saves us time for leisure, or to work more on the things we either choose or are forced to do).

Hornborg thus leaves the historical dynamic of the progressive substitution of human labor with machines unexplained. Perhaps technological change is driven by the consumption of evolving prestige items, but he never affirms it. Technological development is for him just an expression of capital accumulation – but how can the Machine, the fetish catalyzing unequal exchange, explain its own growth?

Asserting that economic value descends exclusively from cultural evaluation, Hornborg also demolishes the Ricardian and Marxian labor theory of value.<sup>43</sup> But a labor theory of value is not needed to account for technological progress:<sup>44</sup> it can be justified merely by the effort of capitalists to save on their costs, in the context of the unequal exchange: what is driving the system in the direction of a growing application of machines to production is the quest for an ever lower cost of labor and/or an ever lower price of resources, which raises the monetary revenues. It means that the economic, or rather political objective of the core is to keep low the price of fossil fuels (in particular) and of all other raw materials provided by the periphery, or to reduce it .

As also Hornborg emphasizes, the decision to adopt a certain technology in a productive process is always tied to its economic convenience (while the progress in weapon technology is sought after even with money profligacy). The increased use of technology is not just the result of inventions immediately applied, as “economic exchange is a part of the technology” (Hornborg 2001, 3). As demonstrated by economic history, new labor-saving machines such as the spinning jenny which started the “industrial revolution” (a concept criticized by Wallerstein as it did not change the logic of the already existing capitalist system) were introduced in order to contrast salary claims when labor became scarce in England and the working class started to organize (e.g. Allen 2009). Inventions were also commissioned by entrepreneurs, precisely in order to save on workers’ salaries when they tended to go up. Piero Sraffa showed that in general prices depend on the initial distribution of purchasing power, and that wages depend on the social power of the working class. World-systems analysis, deriving the concept from

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<sup>43</sup> Some of his most recent writings are dedicated to it (Hornborg 2014; Trawick and Hornborg 2015a). He acknowledges its validity in pre-fossil fuel societies, though (Hornborg 2001, 12).

<sup>44</sup> In world-system analysis labor could or could not be the source of value, because the unequal distribution of the surplus is explained by monopoly (and oligopoly) dynamics, skipping the problem of the transformation of labor values into prices. Technological progress is attributed to the quest for monopolies, that have a political but also a technical component. Hornborg (2011, 103) dismisses as economicism this explanation of unequal exchange as based on monopoly.

feminists (e.g. Mies 1987, Mies and Bennholdt-Thomsen 1999), affirms that the central issue in determining the price of labor is how much subsistence work and directly-consumed products – entailing the exploitation of women – are available in a particular place in order to sustain workers' lives without recourse to the market. In other words, the issue is whether workers are semiproletarians or full proletarians, defined by Smith and Wallerstein (1992) as, respectively, those who must purchase with money either less or more than the half of what they need (the cut-off point is admittedly arbitrary). The subsistence sector keeps the wages down for semi-proletarians. But proletarianization is a continuous process in the capitalist world-economy and coincides with the expansion of the monetary sphere. Its motors are two: working class organizing to raise wages and accumulation of commodities that need to be sold, undermining (underselling, so to speak) the subsistence production. The transformation of workers into full proletarians is fostered by the Machine, which is offering products obtained with an unequal exchange, and sharing its abundant revenues with the workers' elite, which resides in core countries and is benefitted by the monopoly prices for the finished commodities they produce. More and more goods and services previously obtained without money are substituted with commodities, but this can never fully be accomplished, since the core always requires a periphery to exploit its subsistence labor and goods: as the working class in the core becomes proletarian, the commodities they use must be produced by a new semiproletariat.

What pushes the world-economy to its limits in a final economic crisis in world-systems perspective is not as in Marx the diminution of living labor, but proletarianization. Labor is cheap where the labor force can subsist on a non-monetary sector, that is the subsistence economy, but the subsistence sector shrinks, as the areas external to the world-economy are progressively incorporated in it (the implicit reference is *The Accumulation of Capital* by Rosa Luxemburg). Money, as Braudel taught, must always rest on a much wider base of “vie materielle:” the subsistence sphere.

Indulging in generalizations over the Machine, we can make another observation about Hornborg's reprise of the fetishism of the Machine analyzed by Marx. Gender is absent,<sup>45</sup> but it is evident that the Machine belongs to (some) men while nearly all subsistence work is done by women. The social value of men's and women's work is different because historically the male sex constituted and defended a monopoly on tools and weapons, sources of social power (Tabet 1998). Fascination about machines and their fetishization are important parts of the masculine culture. The Machine has therefore been interpreted by second-wave feminists as the prop that males, unable to create life with their bodies, have used to show their social value ever since the foundation of patriarchy. This is a highly stylized statement,<sup>46</sup> but it resonates with the ubiquitous equation of masculinity with machine use, which is rewarded with a higher pay than working without machines, as for example Ester Boserup (1981) has shown, and sets in motion exclusionary alliances on the basis of sex, so that only men enjoy the higher salaries reserved to the “skilled workforce.” The ecologically and also socially destructive quest for prestige by socially conforming males has been unflinching denounced by feminists (e.g. Daly 1978, Merchant 1980).

### **Conclusion: Expo and the three crises**

In Hornborg's comparison of industrialism with a pre-industrial case of unequal exchange without machines, he notes that Inca emperors could enjoy popular favor by distributing *chicha* beer, though it was obtained using only a fraction of the maize harvest that was taken away from farmers. Expo instead is not distributing anything – on the contrary it is used to cut social rights and welfare, openly fostering the weakening of the working class social position. Redistribution for Expo is only foreseen in terms of the paying tourists benefitting “the economy” of the city. And while there are no records of opposition to the redistribution of the *chicha*, tens of thousands have marched to express their indignation at the construction of the Expo, seen as a particularly disgraceful example of the political-economic choices of the multilevel liberal governments (though admittedly in a much less striking and

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<sup>45</sup> Or naturalized (Hornborg 2011, 48). And Hornborg doesn't bat an eyelid in qualifying “the accumulation of ‘chosen women’ conceived of as the property of the Inca king” as a “human economy” – where also human sacrifices were performed (Hornborg 2001, 74).

<sup>46</sup> But Hornborg himself (2001, 121) mentions that among the meaning of “to produce” there is also “to give birth to.”

diffuse way than the social movements against the expenses for another mega-event, the football World Cup that took place in Brazil in 2014). Expo's works serve the maintenance of social order, and aim at enhancing prestige for the ruling class. But the pursuit of prestige for those who eat cake can be dangerous when bread is becoming difficult to come by. There's nothing to celebrate in times of crisis, especially not the Machine that is causing it with its unsustainability.

So how does a mega-event like the current Expo in Milan relate to the three crises investigated in this conference? Its realization certainly contributes to the energy and environmental crises but it is hyped to the population as a way to "restart the economy" with a Keynesian approach, a completion of the D-M-D' circuit fueled by public debt, which – in contrast to the economic policies of the '30 in the US – does not aim at public utility, but lies definitively on the *civenses* side. The financial crisis which started in 2008 has influenced Expo and its related expenses only by some cutting of the State money allocation, but the sum has remained immense (11.4 billion euros). The foreseen increase in value of the developed land on which it is taking place, the promise of future value flows, doesn't seem to be going to happen anytime soon. Expo's futile expenses will simply contribute to public debt and to the fiscal crisis of the State.

Hornborg finds a connection between the socioeconomic crisis and the ecological one, as both derive from the depletion of the limited stock of mineral exergy – what we also call the energetic crisis:

The declining *net* productivity of a growing structure (resulting from rising energy requirements for maintenance) is as inexorable for the technomass of late capitalism as it is for the biomass of a climax rain forest. Industry's demand for profit is not, as Marx saw it, a specifically "capitalist" problem that can be neutralized by altering the system of ownership and distribution, but a symptom of the thermodynamic *inefficiency* of industrial production. (Hornborg 2001, 104, see also Hornborg 2013)

This is quite surprising, given his decoupling of the monetary circuit from the physical analysis. But he also tentatively suggests that the market principle could be the ultimate culprit for the environmental crisis: "It is not unreasonable to identify the market principle itself – the notion of a generalized interchangeability – as ultimately responsible for accelerating environmental problems" (Hornborg 2001, 193).

His perspective on the crises departs from world-system analysis, which ties up the final world-economy's crisis to the organization of a progressively proletarianized working class and with the other mechanisms that raise the monetary costs to the private sector until profit is nullified: exhaustion of raw materials, growing tax costs to recoup externalities, social opposition to the use of the environment as a sink for toxic wastes etc. Wallerstein, encompassing the analysis of the fiscal crisis of the State by O'Connor and the critique of the socialization of the costs of the private enterprise by Kapp, envisages a turning point for the capitalist world-economy when this dislocation of costs from the private sector to the collectivity will no longer be possible. His mechanisms are purely social: all the environmental roots of the crisis are active only through social mobilization that inevitably drives up the costs to the enterprises. Hornborg adds a thermodynamic analysis, implying that an end to unequal exchange could come through simple depletion of fossil fuels, though he urges a cultural shift that would break through the veil of the money circuit and of economics to consciously change our social organization.

But a theme overlooked by Hornborg is the Machine as Weapon. In this paper I showed that the threat of the exercise of State force, particularly economic violence, defeated opposition to Expo-related public works, though cultural power is also employed to legitimate public expenditures for it. According to the Swedish anthropologist, what "ultimately keeps our machines running are global terms of trade," but in turn these are ultimately imposed by military capacity. Though the power of the Machine can be legitimized by cultural elements, it is ultimately sustained by a machine of a particular kind: the Weapon.

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